

In the Application of
Short et al.
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PATENT
Attorney Docket No.: DIVER1260-3

IN THE CLAIMS:

~~Please cancel~~ claims 4-31 without prejudice.

Please add new claims 32-47 as follows:

~~32. A method for identifying a protein activity of interest comprising:~~

for DIO
~~culturing a gene expression library comprising a pool of expression constructs, each expression construct comprising a vector containing one or more cDNA or genomic DNA fragments, wherein the cDNA or genomic DNA fragments in the pool of expression constructs are derived from a plurality of species of donor organisms, and wherein the cDNA or genomic DNA fragments are operably-associated with one or more regulatory regions that drives expression of genes encoded by the cDNA or genomic DNA fragments in an appropriate host organism, wherein the library is formed by performing at least one of the steps selected from the group consisting of (i) amplifying the copy number of the DNA population so isolated and (ii) recovering a fraction of the isolated cDNA or genomic DNA having a desired characteristic; and normalizing the representation of various DNAs within the cDNA or genomic DNA population so as to form a normalized library of cDNA or genomic DNA; and detecting the protein activity encoded by the cDNA or genomic DNA fragments in the normalized library.~~

33. The method of claim 32, wherein the protein activity is an enzymatic activity.
34. The method of claim 33, wherein the enzymatic activity is selected from the group consisting of oxidoreductase, transferase, hydrolase, lyase, isomerase, and ligase activity.
35. The method of claim 34, wherein the enzymatic activity is a lipase, a protease, a glycosidase, a synthase, and a kinase.

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36. The method of claim 32, wherein the donor organisms are microorganisms.

37. The method of claim 36, wherein the microorganisms are derived from an environmental sample.

38. The method of claim 36, wherein the microorganisms are a mixed population of uncultured organisms.

39. The method of claim 32, wherein the DNA fragment comprises one or more operons, or portions thereof.

40. The method of claim 39, wherein the operon or portions thereof encodes a complete or partial metabolic pathway.

41. The method of claim 32, wherein the DNA comprises a gene cluster.

42. The method of claim 41, wherein the gene cluster encodes one or more polyketide synthases.

43. The method of claim 32, which comprises the step of recovering a fraction of the isolated DNA having a desired characteristic.

44. The method of claim 32 which comprises the step of amplifying the copy number of the DNA population so isolated.

45. The process of claim 32 wherein the step of amplifying the DNA precedes the normalizing step.